MAXWELL JONES

mjones2@andrew.cmu.edu
maxwelljon.es
6318044114
maxwelljones14
maxwelljones14

I am obtaining a BS in Artificial Intelligence and second BS in Mathematics at Carnegie Mellon University. I am graduating undergrad in 2023, but plan to do a fifth year masters. **I will be graduating from my planned masters in 2024. I am currently seeking a SWE/ML Research internship for Summer 2023**

Skills

PROGRAMMING LANGUAGES

Python
Java
C
JavaScript
HTML / CSS
LaTeX
SQL
Julia

TOOLS/FRAMEWORKS

NumPy
Pytorch
SciPy
Unix Command Line
Git
Sklearn
Keras
Pandas
Jupyter Notebook
regex
Matplotlib

COURSEWORK

15-485 Intro to Deep Learning
16-385 Computer Vision
10-703 Deep Reinforcement Learning
10-725 Convex Optimization
10-315 Intro to Machine Learning
15-281 Artificial Intelligence
15-210 Parallel Algorithms
15-213 Computer Systems
21-484 Graph Theory
15-251 Theoretical Computer Science

HOBBIES/INVOLVEMENT

Origami Club (Treasurer)
Carnegie Mellon Club Basketball
NSBE (National Society of Black Engineers)
Kappa Sigma Fraternity
Carnegie Mellon Intramural Volleyball

Education

Carnegie Mellon University — Sept. 2019 to Current
BS Artificial Intelligence 2023 (Planned Masters Graduating 2024)
BS Math 2023
GPA: 4.0/4.0

Thomas Jefferson High School for Science and Technology — Sept. 2015 to May 2019
High School Diploma 2019
GPA: 4.1/5.0

Employment

Meta | FAIR Labs — New York City, NY
Software Engineer/Machine Learning Intern — May 2022 to Current

- Co-authoring paper to benchmark algorithmic **Bias Amplification** of models from biased datasets
- Using **ResNet-18** using **ClassyVision** and **Pytorch** to benchmark bias for controlled subsets of **The Visual Genome** dataset
- Creating custom datasets, running experiments, and **Cleaning Data** for **Image Classification**
- Developed **Scripts** to run **Custom Config Files** using both **Bash** and **Python** for large scale hyperparameter testing/analysis
- **Coordinated efforts for myself and 3 full time employees**, co-authors on **Computer Vision** FAIR team

Meta | Probability and Uncertainty — Remote
Software Engineer Intern — May 2021 to Aug. 2021

- Developed data perturbation training/evaluating/testing pipeline in **Python,** leveraging **Pytorch** for main testing
- Tested probabilistic models including **Bayesian**, **Ensemble**, and **Dropout** focused networks modeled off of **LeNet-5**
- Evaluated models on perturbed image data (**Random Cropping, Rotation, Jittering**)
- Used **MNIST** and **FashionMNIST** datasets for testing, Created visualizations using **Matplotlib** for presentation

Carnegie Mellon University — Pittsburgh, PA
(Head) Teaching Assistant — Fall 2020 to Current

- Over 2+ years, **Head TA** for **50+ TAs,** impacting **500+ students** (Concepts of Mathematics, Theoretical CS)
- Responsible for **hiring, providing training** and **assessing performance** for TAs
- Contributed significantly to **course structure generation** and **exam creation**
- **Design/Lead staff meetings,** coordinate **TA-Professor interactions, delegate TA responsibilities**

Fiat Chrysler Automobiles — Remote
Data Science Intern — May 2020 to Aug. 2020

- Worked on amount of absentee workers prediction model across production plants
- **Significant increase in model accuracy** for absentee worker prediction at all plants (2% increase, 5000+ employees)
- Improved model performance by using **Random Forests** and **XGBoost,** cross referencing crew attendance across plants
- Queried data from **PostgreSQL** database and used **Pandas** library to store query results

Projects

Semi Supervised Learning Research, Carnegie Mellon University — Fall 2021 to Current

- Supporting PHD-level research in scalable graph-based Semi-Supervised Learning project
- Using **Python** and **SciPy,** finding **Harmonic Objectives,** leveraging **K-Nearest Neighbor** graphs and fast iterative solvers
- Performing evaluation on **MNIST, CIFAR,** and common **NLP** datasets (20-newsgroups) with **Sklearn** using **Bag of Words**
- Achieved **same accuracy, 100x speedup** on large graphs with respect to closed form solutions with matrix inverses
- Used **Image Embeddings** from layer 2 of **Resnet-18** adapted for CIFAR in order to clean up more difficult image classification problem before iterating

Battlecode AI Competition (codebase) — Jan. 2022

- Created **Java s**oftware on small team, for AI bot to compete against other teams in month-long MIT lead tournament
- Combined 500+ person-hours, 2000+ lines of code in both 2021 and 2022
- Leveraged **distributed** communication **algorithms** and **pathfinding** to increase bot's effectiveness
- Implemented **bit packing** methods, **Priority Queues** and **Stacks,** and **K-Means Clustering** to improve performance
- Placed top 10 out of 250 teams internationally(2021, 2022), 1st out of all first-time teams(2021), **$2000+ in prize winnings**

TartanHacks: Spot your Mood! (codebase) — Feb. 2021

- Competed in Carnegie Mellon's main Hackathon on team of 4
- Created an add on for **Spotify** using **Python** and **Flask** to track mood of users listening
- Developed **Vector Embeddings** for mood based on **Spotify API** metadata and sentiment anaylsis
- Used **Euclidean Distance** in the **Embedding Space** to execute recommendation decisions
- Functionality for both song and playlist generation based on mood factors and specific genre choices

TartanHacks: WalkSafe! (codebase) — Feb. 2020

- Developed a Python program on team of 4 that calculates safe and efficient walking paths at night in New York City
- Created a weighted graph from crime and street data and implemented an **A* Pathfinding** algorithm
- Integrated **Open Street Map API** and fetched data from NYPD crime database REST endpoint